

PDS4 Binary Data Type Definitions

Following is a glossary of data type definitions for values in data objects stored in binary (i.e., hardware) formats, extracted from the PDS4 information model and related documents.

For definitions for ASCII string representations see [PDS4 Character Data Type Definitions](#).

Binary Representations

ComplexLSB16

This data type consists of a pair of consecutive floating point values of type **IEEE754LSBDouble**, the sequentially first representing the real part of a complex value and the second representing the imaginary part.

ComplexLSB8

This data type consists of a pair of consecutive floating point values of type **IEEE754LSBSingle**, the sequentially first representing the real part of a complex value and the second representing the imaginary part.

ComplexMSB16

This data type consists of a pair of consecutive floating point values of type **IEEE754MSBDouble**, the sequentially first representing the real part of a complex value and the second representing the imaginary part.

ComplexMSB8

This data type consists of a pair of consecutive floating point values of type **IEEE754MSBSingle**, the sequentially first representing the real part of a complex value and the second representing the imaginary part.

IEEE754LSBDouble

This data type consists of 8 bytes defining a double-precision floating point value as described in the IEEE 754 standard for hardware representation. It is stored so that the least significant byte - the byte containing the lowest-order bits of the mantissa, is sequentially first in storage.

IEEE754LSBSingle

This data type consists of 4 bytes defining a single-precision floating point value as described in the IEEE 754 standard for hardware representation. It is stored so that the least significant byte - the byte containing the lowest-order bits of the mantissa, is sequentially first in storage.

IEEE754MSBDouble

This data type consists of 8 bytes defining a double-precision floating point value as described in the IEEE 754 standard for hardware representation. It is stored so that the most significant byte - the byte containing the bits of the exponent, is sequentially first in storage.

IEEE754MSBSingle

This data type consists of 4 bytes defining a single-precision floating point value as described in the IEEE 754 standard for hardware representation. It is stored so that the most significant byte - the byte containing the bits of the exponent, is sequentially first in storage.

SignedBitString

This data type is a string of bits, not necessarily falling on byte boundaries, in which represents an integer that may be positive or negative. If negative, it is in two's complement form, so that the first (leftmost) bit can be interpreted as the sign bit.

SignedByte

This data type is a small, two's-complement integer in the range -128 to 127, stored in a single byte.
Usage Note: Any field in a binary table with this data type *must* have a <field_length> of one byte, but **schema validation does not check this** as of this writing.

SignedLSB2

This data type is a signed, two-byte, two's-complement integer stored so that the lower-order byte is sequentially first in storage.

SignedLSB4

This data type is a signed, four-byte, two's-complement integer stored so that the lowest-order byte is sequentially first in storage.

SignedLSB8

This data type is a signed, eight-byte, two's-complement integer stored so that the lowest-order byte is sequentially first in storage.

Usage Note: This is not a widely-supported data type.

SignedMSB2

This data type is a signed, two-byte, two's-complement integer stored so that the higher-order byte is sequentially first in storage.

SignedMSB4

This data type is a signed, four-byte, two's-complement integer stored so that the highest-order byte is sequentially first in storage.

SignedMSB8

This data type is a signed, eight-byte, two's-complement integer stored so that the highest-order byte is sequentially first in storage.

Usage Note: This is not a widely-supported data type.

UnsignedBitString

This data type indicates a string of bits, not necessarily aligned on a byte boundary, which represent a non-negative integer. In this case the first (left most) bit is part of the value and *not* a sign bit.

UnsignedByte

This data type indicates a single byte which contains a small integer in the range 0 to 255.

Usage Note: Any field in a binary table with this data type *must* have a <field_length> of one byte, but **schema validation does not check this** as of this writing.

UnsignedLSB2

This data type is an unsigned, two-byte integer stored so that the lower-order byte is sequentially first in storage.

UnsignedLSB4

This data type is an unsigned, four-byte integer stored so that the lowest-order byte is sequentially first in storage.

UnsignedLSB8

This data type is an unsigned, eight-byte integer stored so that the lowest-order byte is sequentially first in storage.

Usage Note: This is not a widely-supported data type.

UnsignedMSB2

This data type is an unsigned, two-byte integer stored so that the higher-order byte is sequentially first in storage.

UnsignedMSB4

This data type is an unsigned, four-byte integer stored so that the highest-order byte is sequentially first in storage.

UnsignedMSB8

This data type is an unsigned, eight-byte integer stored so that the highest-order byte is sequentially first in storage.

Usage Note: This is not a widely-supported data type.